



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,580	04/04/2006	Hiroshi Kawato	287297US0PCT	9317
22850	7590	11/29/2007		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
VO, HAI				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
11/29/2007		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

### Office Action Summary

**Application No.**

10/574,580

**Applicant(s)**

KAWATO ET AL.

**Examiner**

Hai Vo

**Art Unit**

1794

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6-11 and 15-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11 and 15-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

1. The 112 claim rejections and art rejections have been withdrawn in view of the present amendment. Hay does not teach the polycarbonate resin foam having a foaming ratio of from 1.1 to 3 times. However, upon further consideration, new ground of rejection is made in view of newly discovered references to JP 2003-049018 and Hirose et al (US 5,854,294).

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 9-11, 21, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hay et al (US 2004/0043234) in view of Hirose et al (US 5,854,294). Hay teaches a light management film comprising a substrate and a UV stable coating layer laminated to the substrate (paragraphs 24 and 27). The substrate is a foam material made from a blend of resorcinol acrylate polyester and polycarbonate (paragraph 24). The substrate has a thickness of 0.0015 to 0.08 in (paragraph 45). The light management film has a light reflectance of 100% (paragraph 34). Turning to the present specification, Applicants state that when the value of S/D is 15 or more, high reflectance is obtained. Likewise, the light reflectance of 100% would simply suggest that the foam would substantially have the S/D value within the claimed range so as to attain the high reflectance. The light

management film could be laminated with a metal plate (paragraph 34). Hay does not teach a foaming ratio. Hirosawa, however, teaches a foamed body of polycarbonate resin having a blow ratio of 2.5 (table 1-1) for good surface conditions, improved thermal moldability of the foamed sheet (column 4, lines 55-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the foamed substrate with a blow ratio of 2.5 motivated by the desire to provide the foamed substrate with good surface conditions and improved thermal moldability.

It appears that the light management film of Hay as modified by Hirosawa meets all the structural limitations and chemistry as required by the claims; therefore, it is the examiner's position that the color difference, reduction in visible light reflectance will be inherently present as like material has like property. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete.

Hay as modified by Hirosawa does not teach the process of making a polycarbonate resin foam set forth in the claim. However, it is a product-by-process limitation not as yet shown to produce a patentably distinct article. It is the examiner's position that the article of Hay as modified by Hirosawa is identical to or only slightly different than the claimed article prepared by the method of the claim, because both articles are formed from the same materials, having structural similarity. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The

patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or an obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show unobvious differences between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289,291 (Fed. Cir. 1983). It is noted that if the applicant intends to rely on Examples in the specification or in a submitted Declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with Hay as modified by Hiroawa.

4. Claims 2, 3, 6-8, 15-20, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hay et al (US 2004/0043234) in view of Hiroawa et al (US 5,854,294) as applied to claim 1 above, and further in view of Funaki et al (US 2006/0159926). Hay does not teach polycarbonate resin is a copolymer of polycarbonate and polysiloxane. Funaki, however, teaches a light-reflecting sheet comprising a polycarbonate resin base and a light-fast layer laminated to the polycarbonate resin base (abstract). Funaki discloses the polycarbonate resin is a copolymer of polycarbonate and polysiloxane such as PDMS (paragraphs 44 and 55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a copolymer of polycarbonate and

polysiloxane in combination with an arylate polyester polymer motivated by the desire to impart the flame retardancy to the light management film.

Hay does not teach a UV stable coating layer having a thickness of from 0.4 to 20  $\mu\text{m}$ . Funaki teaches the light reflection sheet wherein the light-fast layer is made from an acrylic copolymerized with UV light absorbing component (paragraphs 112, 115-117). The light-fast layer has a thickness of 0.2 to 20  $\mu\text{m}$  (paragraph 125). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use UV stable coating layer having a thickness of from 0.4 to 20  $\mu\text{m}$  motivated by the desire to obtain satisfactory UV absorbing performance while maintaining high reflectance of the light management film.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an acrylic copolymerized with UV light absorbing component as a UV stable coating layer motivated by the desire to stabilize the coating layer against thermal and light degradation and thus providing the coating layer with excellent weather resistance, and improved durability.

5. Claims 6-8, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hay et al (US 2004/0043234) in view of Hirose et al (US 5,854,294) as applied to claim 1 above, and further in view of WO 00/02964. Ogawa et al (US 6,703,139) will be relied on as an equivalent form of WO 00/02964 for convenience. Hay does not teach a UV stable coating layer having a thickness of from 0.4 to 20  $\mu\text{m}$  and a claimed composition. Ogawa teaches a weather resistant composition comprising a reaction product of a bisbenzotriazolylphenol, an acrylate and a curing

agent (abstract). Likewise, Ogawa discloses the weather resistant composition comprising a copolymer of an acrylic and UV light absorbing component, having a thickness of 1  $\mu\text{m}$  (column 25, lines 1-15). The composition coating has been applied to synthetic resin substrate for providing excellent weather resistance and transparency for a longed period in addition to superior mechanical strength, wear resistance, scratch resistance and chemical resistance (column 16, lines 40-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use UV stable coating layer made from an acrylic copolymerized with UV light absorbing component, having a thickness of 1  $\mu\text{m}$  motivated by the desire to obtain satisfactory UV absorbing performance in addition to excellent weather resistance and improved durability.

6. Claims 1-4, 9-11, and 20-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2003-049018 in view of Hay et al (US 2004/0043234). Saito et al (US 2004/0198853) will be relied on as an equivalent form of JP 2003-049018 for convenience. Saito teaches a light reflecting polycarbonate resin foam having a foaming ratio of from 1.1 to 3 times and a value of S/D of 15 or more (paragraphs 7 and 25). The polycarbonate resin foam comprises a copolymer of polyacarbonates and polysiloxane (paragraph 17). Saito does not specifically disclose a light resisting layer directly laminated to the polycarbonate resin foam layer. Hay, however, teaches a light management film comprising a polycarbonate foam resin layer coated with a UV absorbing layer (paragraphs 27-30). Hay discloses the foam layer having a thickness of 0.0015 to 0.08 in (paragraph 45). Therefore, it would

have been obvious to one having ordinary skill in the art at the time the invention was made to apply a UV absorbing layer on the surface of the light reflecting layer of Saito motivated by the desire to prevent the deterioration of the foam layer by UV light.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the foam layer with a thickness as taught by Hay motivated by the desire to obtain adequate foaming while maintaining the evenness of the foam cell structure.

Saito does not specifically disclose a light reflecting polycarbonate laminated to a metal plate. Hay discloses the light reflecting polycarbonate laminated to a metal plate (paragraph 34). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to laminate a metal plate to the light reflecting polycarbonate for the purpose of diffusing heat.

The light reflecting polycarbonate resin sheet of Saito as modified by Hay meets all the structural limitations and chemistry as required by the claims. The UV absorbing layer is directly bonded to a polycarbonate resin foam layer which has a foam magnification of from 1.1 to 3 times and a thickness of from 0.1 to 2 mm. The polycarbonate foam layer is made from a copolymer of polycarbonate and polysiloxane and has a value of S/D within the claimed range. Therefore, it is the examiner's position that the color difference before and after UV light irradiation, reduction in visible light reflectance, light reflectance and light transmission would be inherently present. It seems from the claim, if one meets the structure recited, the



properties must be met or Applicant's claim is incomplete (Note discussion found in Ex parte Slob, 157 USPQ 172).

7. Claims 6-8, 11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2003-049018 in view of Hay et al (US 2004/0043234) as applied to claim 1 above, further in view of Funaki et al (US 2006/0159926). Neither JP'018 nor Hay discloses a thickness of the UV absorbing layer. Funaki, however, teaches a light-reflecting sheet comprising a polycarbonate resin base and a light-fast layer laminated to the polycarbonate resin base (abstract). Funaki teaches the light reflection sheet wherein the light-fast layer is made from an acrylic copolymerized with UV light absorbing component (paragraphs 112, 115-117). The light-fast layer has a thickness of 0.2 to 20  $\mu\text{m}$  (paragraph 125). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use UV stable coating layer having a thickness of from 0.4 to 20  $\mu\text{m}$  motivated by the desire to obtain satisfactory UV absorbing performance while maintaining high reflectance of the light management film.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an acrylic copolymerized with UV light absorbing component as a UV stable coating layer motivated by the desire to stabilize the coating layer against thermal and light degradation and thus providing the coating layer with excellent weather resistance, and improved durability.

Saito does not specifically disclose a light reflecting polycarbonate laminated to a metal plate. Funaki discloses the light reflecting polycarbonate laminated to a

metal plate for the purpose of diffusing of heat (paragraph 83). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to laminate a metal plate to the light reflecting polycarbonate for the purpose of diffusing heat.

8. Claims 6-8, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2003-049018 in view of Hay et al (US 2004/0043234) as applied to claim 1 above, and further in view of WO 00/02964. Ogawa et al (US 6,703,139) will be relied on as an equivalent form of WO 00/02964 for convenience. Neither JP'018 nor Hay teaches a UV stable coating layer having a thickness of from 0.4 to 20  $\mu\text{m}$  and a claimed composition for making the UV stable coating layer. Ogawa teaches a weather resistant composition comprising a reaction product of a bisbenzotriazolyphenol, an acrylate and a curing agent (abstract). Likewise, Ogawa discloses the weather resistant composition comprising a copolymer of an acrylic and UV light absorbing component, and having a thickness of 1  $\mu\text{m}$  (column 25, lines 1-15). The composition coating has been applied to synthetic resin substrate for providing excellent weather resistance and transparency for a longed period in addition to superior mechanical strength, wear resistance, scratch resistance and chemical resistance (column 16, lines 40-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use UV stable coating layer made from an acrylic copolymerized with UV light absorbing component, having a thickness of 1  $\mu\text{m}$  motivated by the desire to obtain

satisfactory UV absorbing performance in addition to excellent weather resistance and improved durability.

### ***Response to Arguments***

9. Applicants argue that Hay's light management film requires transmission to obtain retro-reflection. However, light transmission is not positively recited in claim 1. Similarly, Applicants contend that Hay achieves high total internal reflectance by embossing the film surface with microprisms. Hay's film is thus structurally different from the film of the present invention. Again, the arguments are not found persuasive because the claim does not require the film not to have an embossed surface.

Applicants further argue that Funaki is improperly combinable with Hay because Funaki requires the polymeric material filled with titanium oxide while the polymer of Hay must have light transmitting properties for high total internal reflection. The presence of titanium oxide in the Funaki polymers is completely irrelevant to the basis of the rejection. Titanium dioxide is not materially added into the resin composition of Hay when Funaki's copolymer of polycarbonate and polysiloxane is used in combination with an arylate polyester polymer of Hay. Funaki is not ever relied on for using the material of Funaki for forming the foamed substrate of Hay. Accordingly, Funaki is properly combinable with Hay to establish a *prima facie* case of obviousness. It is suggested that incorporation of limitations from claim 22 to claim 1 would remove Hay as prior art. Nakayama et al (US

2001/002111) evidence a retroreflective sheet having a light transmission of at least 10% (paragraph 69).

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on Monday through Thursday, from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax

Art Unit: 1794

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HV

/Hai Vo/  
Primary Examiner, Art Unit 1794